Parkinson's disease

Overview

Parkinson's disease is a movement disorder of the nervous system that worsens over time. The nervous system is a network of nerve cells that controls many parts of the body, including movement.

Symptoms start slowly. The first symptom may be a barely noticeable tremor in just one hand or sometimes a foot or the jaw. Tremor is common in Parkinson's disease. But the disorder also may cause stiffness, slowing of movement and trouble with balance that raises the risk of falls.

In the early stages of Parkinson's disease, your face may show little or no expression. Your arms may not swing when you walk. Your speech may become soft or slurred. Symptoms get worse over time.

Although Parkinson's disease can't be cured, medicines may help symptoms get better. Sometimes a healthcare professional may suggest surgery to help control parts of the brain. This surgery may help lessen symptoms.

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Symptoms

Parkinson's disease symptoms can be different for everyone. Early symptoms may be mild, and you may not even notice them. Symptoms often begin on one side of the body, then affect both sides. Symptoms are usually worse on one side than the other. Some Parkinson's disease symptoms are similar to those of other disorders.

Parkinson's symptoms may include:

- **Tremor.** This rhythmic shaking usually begins in the hands or fingers. Sometimes tremor begins in the foot or jaw. You may rub your thumb and forefinger back and forth. This is known as a pill-rolling tremor. Your hand may tremble when it's at rest or when you're under stress. You may notice that you shake less when you're doing some sort of task or moving around.
- **Slowed movement, also called bradykinesia.** Parkinson's disease may slow your movement, making simple tasks more difficult. It may be hard to get out of a chair, shower or get dressed. You may have less expression in your face. It may be hard to blink.
- **Rigid muscles.** You may have stiff muscles in any part of your body. Your muscles may feel tense and painful, and your arm movements may be short and jerky.
- **Poor posture and balance.** Your posture may become stooped. You may fall or have balance problems.
- **Loss of automatic movements.** You may be less able to make certain movements that you typically do without thinking, including blinking, smiling or swinging your arms when you walk.

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- **Speech changes.** You may speak softly or quickly, slur, or hesitate before talking. Your speech may be flat or monotone, without typical speech patterns.
- **Writing changes.** You may have trouble writing, and your writing may appear cramped and small.
- **Nonmotor symptoms.** These may include depression, anxiety, constipation and sleep problems. They also may include acting out dreams, needing to urinate often, trouble smelling, problems with thinking and memory, and feeling very tired.

When to see a doctor

See a healthcare professional if you have any symptoms of Parkinson's disease. This will help diagnose your condition and rule out other causes.

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Causes

In Parkinson's disease, nerve cells in the brain called neurons slowly break down or die. Many Parkinson's disease symptoms are caused by a loss of neurons that produce a chemical messenger in the brain. This messenger is called dopamine.

Decreased dopamine leads to irregular brain activity. This causes movement problems and other symptoms of Parkinson's disease. People with Parkinson's disease also lose a chemical messenger called norepinephrine that controls many body functions, such as blood pressure.

The cause of Parkinson's disease is unknown, but several factors seem to play a role, including:

- **Genes.** Specific genetic changes are linked to Parkinson's disease. But these are rare unless many family members have had Parkinson's disease.
- **Environmental factors.** Exposure to certain toxins or other environmental factors may increase the risk of later Parkinson's disease. One example is MPTP, a substance that can be found in illegal drugs and is sometimes sold illegally as "synthetic heroin." Other examples include pesticides and well water used for drinking. But no environmental factor has proved to be a cause.

Many changes happen in the brains of people with Parkinson's disease. Researchers are studying why the changes happen and the roles they play. These changes include:

- **The presence of Lewy bodies.** Clumps of proteins in the brain are associated with Parkinson's disease. These are called Lewy bodies, and researchers believe these proteins hold an important clue to the cause of Parkinson's disease.

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- **Alpha-synuclein found within Lewy bodies.** Alpha-synuclein is a protein found in all Lewy bodies. It occurs in a clumped form that cells can't break down. This is currently an important focus among Parkinson's disease researchers. Alpha-synuclein has been found in the spinal fluid of people who later have Parkinson's disease.
- **Altered mitochondria.** Mitochondria are powerhouse compartments inside cells that create most of the body's energy. Changes to mitochondria can cause cell damage. These changes have been found in the brains of people with Parkinson's disease.

Risk factors

Risk factors for Parkinson's disease include:

- **Age.** The risk of Parkinson's disease increases with age. Usually, it starts around age 50 or older. The average age of onset is around age 70. Parkinson's disease can occur in younger adults, but it is rare. When people younger than age 50 have the disease, it's known as early-onset Parkinson's disease.
- **Genetics.** Having one or more first-degree relatives, such as parents or siblings, with Parkinson's disease increases your risk. Your risks are still small unless you have many blood relatives with the condition.
- **Male sex.** Men are more likely to develop Parkinson's disease than are women.
- **Exposure to toxins.** Ongoing exposure to herbicides and pesticides may slightly increase your risk of Parkinson's disease.

Complications

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People with Parkinson's disease may have other complications that may be treatable. These may include:

- **Trouble thinking clearly.** Parkinson's disease can affect people's memory, language and reasoning skills. The disease also can lead to dementia or other conditions that affect thinking. These complications usually happen later in Parkinson's disease, and medicines usually have only a modest benefit in managing these symptoms.
- **Emotional changes and depression.** Some people may feel irritable and concerned early in the course of Parkinson's disease. They also may have depression and anxiety. Medicines and other treatment can help with these changes.
- **Trouble swallowing and chewing.** Late-stage Parkinson's disease affects the muscles in the mouth. This causes trouble swallowing and chewing, which can lead to not getting enough nutrients in your diet. If food or saliva collects in the mouth, it can cause choking or drooling.
- **Sleep problems and sleep disorders.** You may wake up often during the night, have nightmares and fall asleep during the day.

  Another symptom may be rapid eye movement sleep behavior disorder. This involves acting out your dreams. Medicines and other therapies may help your sleep get better.

Other symptoms that can occur include:

- **Bladder problems.** You may have problems such as urgency.
- **Constipation.** You may have a hard time passing stool. You may pass stool fewer than three times a week.
- **Blood pressure changes.** You may feel dizzy or lightheaded or even faint when you stand up due to a sudden drop in blood pressure. This also is called orthostatic hypotension.
- **Loss of smell.** You may fully or partially lose your sense of smell.

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- **Tiredness.** You may feel very tired and lack energy, especially late in the day.
- **Pain.** You may have pain or cramps in your muscles and joints.
- **Sexual symptoms.** You may have a decrease in sexual desire or performance.

Prevention

Because the cause of Parkinson's disease is not known, there are no proven ways to prevent it. Research shows that some factors may help protect against it. But scientists don't know for sure. These factors include:

- **Exercise.** Aerobic exercise has been linked to a lower risk of Parkinson's disease.
- **Caffeine.** Some studies show a link between drinking caffeinated beverages such as coffee and green tea and a lower risk of Parkinson's disease.
- **Medicines.** Some medicines, such as ibuprofen and statins, have been linked to a lower risk of the disease.

By Mayo Clinic Staff

Parkinson's disease care at Mayo Clinic

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